

DEMONETIZATION AND IMPROVING SECURITY IN MONEY TRANSACTIONS USING SMART CARDS AND GSM TECHNOLOGIES

SAVADAM BALAJI¹ & H. KHAN²

¹Professor, Department of ECE, CMRIT, Hyderabad, India

²Dean, Department of ECE, KL University, Guntur, Andhra Pradesh, India

ABSTRACT

Due to Demonetization of money in India recently, there is a need for public to use smart cards for transactions. In this paper we review various attacks on smart cards and methods of improving security in transactions. We propose a design of a system which provides very high level security by using smart card and GSM technologies. This system is equipped with a smart card reader and a GSM modem. The user essentially should carry the same mobile number as defined in the smart card with him to get access to the system. This eliminates the misuse of individual smart card technology based security systems. The main purpose of this paper is to design and give effect to a safety system based on RFID and GSM technology which can be put into order in bank, offices etc. In this system only true, right person can withdraw his money from safety. We have designed a safety system based on RFID and GSM which can activate, make certain, the user and unlock the door in true time for safety get way in. This system is chiefly of microcontroller, RFID reader, GSM modem, keyboard, and LCD, in this system the RFID reader reads the identification number from tag and sends to the microcontroller, if the identification number is accurate then microcontroller sends the SMS request to the person's mobile number, for the first form let-through secret word to open the safety, if the person send the let through secret word to the microcontroller, which will make certain of the let-through secret words entered by the key board and received from phone. If these 2 let-through secret words are matched the locker will be opened otherwise it will be kept in locked position, This system is more safe than other systems because 2 let-through secret words are needed for verification.

KEYWORDS: GSM.RFID, Locking System, Keyboard & Microcontroller

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INTRODUCTION

In this present age, safety has become almost an issue for most of the people especially in the country, not town and of a town fields. Some people will attempt to person who acts falsely or go out the property which may put in danger the safety of money in the Bank, house, and office. To overcome the safety, a most of people will put in position highly secure locks or systems. There are many types of security systems ready (to be used) in the market which puts to use different types of sensors. The sensor can discover different types of changes come in the environment and the changes will be processed to be given out a ready according to the pre-set value. By the same time this system may not be good for all the time. In this paper we have improved safety of the money in the safe, house, and office by using RFID and GSM technology which will be safer than other systems. Radio-frequency seeing who a person is RFID based access-control system let's only given authority persons to open the safety with GSM technology. Basically, a RFID system is chiefly of a long thin wire structure or twisted cord ring, a transceiver(with decoder) and a transponder (RF tag) using electronics data processing machine. There are many

different types of RFID systems in the market. These are sorted on the base of their number of times ranges. Some of the most commonly used RFID necessary things are low-frequency(30-500 kHz), mid-frequency(900 kHz-1500MHz) and high-frequency(2.4-2.5 GHz)[1]. The action less loose ends is lighter and less high in price than the action-bound loose ends [2]. Complete system for readily moved news (GSM) is a through being present in all nations taken quality example for by numbers, electronic formed of small unit's news. GSM is a common European readily moved telephone quality example for a readily moved formed of small units radio system operating at 900 MHz In the current work, SIM 300 GSM part of a greater unit is used. The SIM 300 part of a greater unit is a Tri band GSM/GPRS answer in a very solid (substance) plug in part of a greater unit marking an industry-standard connection. It gives (up/over/o) voice, facts and fax in a small form arced for owner with low power using up [3]. In this paper we have designed and implemented a security system based on RFID and GSM technology. In this system only authentic person can be recover money from security with two password protection method.

RELATED WORKS

In this section some related works connected to the monitoring system using GSM services are presented.

In [4] Prepaid Water Meter System was developed through remote monitoring without any person intervention. However, [5] developed a water meter reading using GSM system that suitable for remote places to monitor the water meter reading before any billing process. This could reduce the use of human resource for reading the meter and issuing a bill. There was also a work on monitoring of electrical meter reading using GSM network done by [6]. The system was able of monitoring the meter reading and sent an SMS to the official center for billing purpose. This could reduce the number of estimated reading when the empower person unable to reach the meter.

In [9], one more approach using GSM technology to communicate with the remote devices via SMS is remote metering system, in this paper illustrates a technique for remotely reading electricity meter readings using SMS. Both postpaid and prepaid are feasible to implement using this architecture as SMS based data gathering can be done very quickly and efficiently.

In [10] [11], this paper projected a Zigbee-GSM based Monitoring and Remote Control System. In this systems used both Zigbee and GSM for communicating between user and devices. This system allows user to monitor and control devices in the home through a number of controls, including a Zigbee based remote control. Users may remotely monitor and control their home devices using GSM.

In [12], the most important objective of the paper is to design and develop a highly developed vehicle locking system in the real time situation. The design & development of a theft control system for an automobile, which is being used to prevent/control the theft of a vehicle. This system consists of an embedded system and Global System Mobile communication (GSM) technology. This system developed by Pravada P. Wan hade and Prof. S.O. Dahad, the developed system is installed in the vehicle. The mobile is connected to the microcontroller, which is in turn, connected to the engine. Once, the vehicle is being lost, the data is being used by the vehicle person for analysis. The data is passed onto the main insurance server which is in the form of the SMS, the embedded unit reads the SMS and transmits it to the Global Positioning System (GPS) module and says to lock it or to stop the engine immediately. The main concept of this paper vehicle is controlled by GSM and GPS. The designed unit is reliable and efficient system for providing security to the vehicles through GSM, GPS and serial communication.

PROPOSED METHOD

In this proposed work, the RFID reader reads the facts from tag and sends to the microcontroller if the card is well-based then microcontroller put on view the account owner name and number. Then the account have (opinion, property) need to move into the let-through secret word, if the left-through secret word is well-based then microcontroller sends the SMS to account owner number. Then account owner sends the let-through secret word to the microcontroller through phone using GSM. The microcontroller makes a comparison the let-through secret words entered by keyboard and received through telephone. If these let-through secret words are right the microcontroller provides necessary control sign to open the safety. This careful way is simple and more safe than other system

3.1 RFID Fundamentals

Basically, a RFID system is chiefly of a long thin wire structure or twisted cord ting, a transceiver (with decoder) and a transponder (RF tag) using electronics data processing machine orders listed with nothing like it data. There are many different types of RFID systems in the market. These are sorted on the base of their number of times ranges. Some of the most commonly used RFID necessary things are low-frequency (30-500 kHz), mid-frequency (900 kHz-1500MHz) and high-frequency (2.3-2.5GHz). basically, a RFID system is chiefly of three parts: along thin wire structure or twisted cord ring, a transceiver (with decoder) and a transponder (RF tag) using electronics data processing machine order listed with nothing like it data. An RFID reader is an apparatus that is used to question a RFID tag. The reader has along thin wire structure that gives out radio waves; the tag gives a reaction but sending backs its facts. An RFID tag is a microchip grouped together with a long thin wire structure in a very solid (substance) parcel; the making a parcel is structured to let the RFID tag to be having a purpose to be lined. "RFID" stands for radio number of times seeing who a person is. The tag's long thin wire structure gets up signs from a RFID reader or apparatus using light to put paper into electronic form and then comes back the sign, usually with some addition of facts (like a nothing like it one after another number or other made to person's desire data). A action less tag is a RFID tag that does not have within an apparatus for producing electric current, the power is supplied by the reader. When radio waves from the reader are met by an action less RFID tag, the twisted long thin wire structure within the tag forms a magnetic field. The tag pulls up power from it, energizing the journeys round in the tag. The tag then sends the data made a rule in the tag's memory. The RX and TX pins of RFID reader connected to TX and RX pins of AT89C51 microcontroller separately. Then the reader senses the data for computer from the tag and gives on the sensed facts to microcontroller via one after another.



Figure 1: RFID Reader

GSM Modem SIM300 V7.03

The GSM modem is a specialized type of modem which accepts a SIM card operates on a subscriber's mobile number over a network, just like a cellular phone. Basically, it is a cell phone without display. modem sim300 is a triband GSM/GPRS engine that works on.

EGSM900MHz, DCS1800MHz and PCS1900MHz frequencies. GSM Modem is RS232-logic level compatible, i.e., it takes -3v to -15v as logic high and +3v to +15 as logic low. MAX232 is used to convert TTL into RS232 logic level converter used between the microcontroller and the GSM board. The signal at pin 11 of the microcontroller is sent to the GSM modem through pin 11 of max232. This signal is received at pin2 (RX) of the GSM modem. The GSM modem transmits the signal from pin3 (TX) to the microcontroller through MAX232, which is received at pin 10 of IC1.



Figure 2: GSM Modulator/Demodulator

BLOCK DIAGRAM

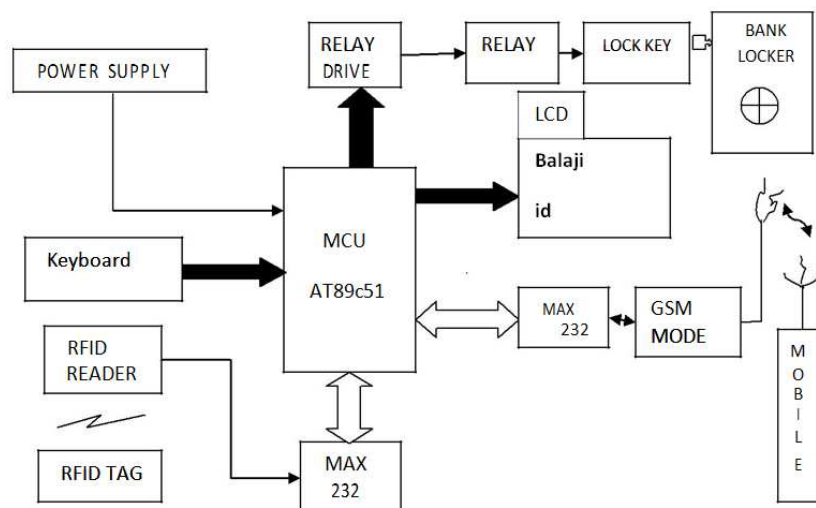


Figure 3: Block Diagram of Security System based on RFID and GSM Technology

The block diagram of Security system based on RFID and GSM technology is shown in the figure 3. It comprises the power supply section, keyboard, RFID Reader, AT89C51 microcontroller, MAX232driver, relay driver and GSM modem, LCD. The GSM board has a valid SIM card with sufficient recharge amount to make outgoing calls. The circuit is powered by regulated +5v dc.

CIRCUIT DESCRIPTION 5.1 POWER SUPPLY

The power supply section is the important for any electronics circuits. To derive the power supply, the 230V, 50Hz AC mains is stepped down by transformer X1 to deliver a secondary output of 12V, 500 mA. The transformer output is rectified by a full-wave rectifier comprising diodes D1 through D4, filtered by capacitor C1 and regulated by ICs 7812 (IC2) and 7805 (IC3). Capacitor C2 bypasses the ripples present in the regulated supply. LED1 acts as the power indicator and R1 limits the current through LED1. The power supply section is shown in the figure 4.

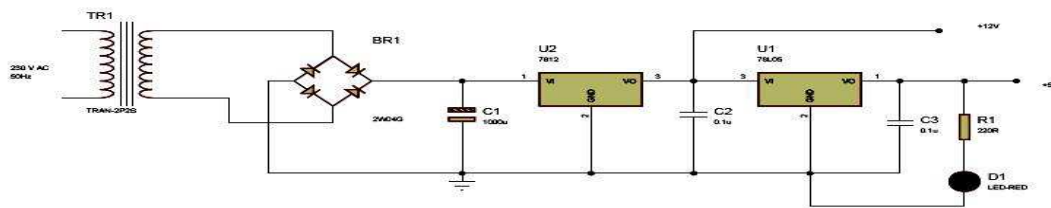


Figure 4: Power Supply

Circuit Diagram

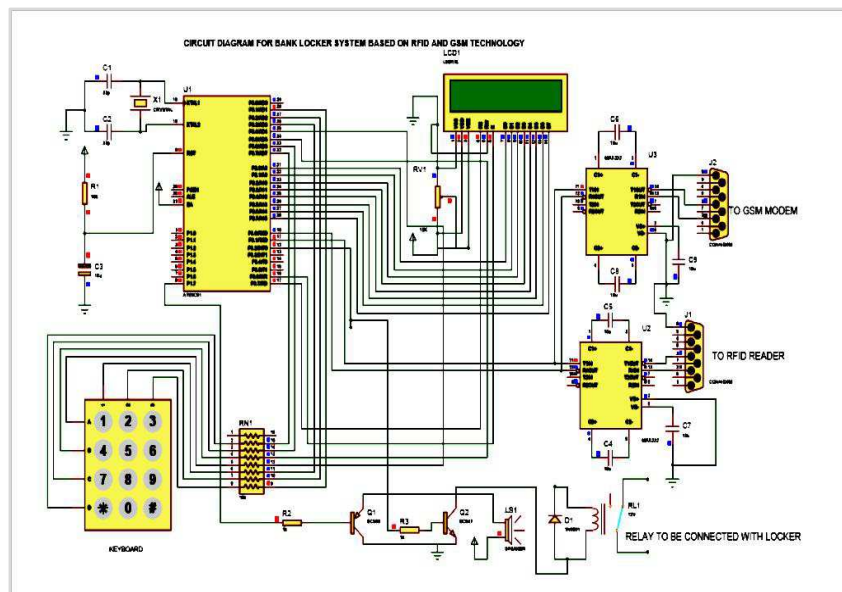


Figure 5: Circuit Diagram of Security System

Figure 5 demonstrates the circuit of the Security framework in view of RFID and GSM innovation. The conservative hardware is worked around Atmel AT89C52 microcontroller. The AT89C52 is a low-control; superior CMOS 8-bit microcomputer with 8 kB of Flash programmable and erasable read just memory (PEROM). It has 256 bytes of RAM, 32 input/output (I/O) lines, three 16-bit clocks/counters, a six-vector two-level interfere with engineering, a full-duplex serial port, on-chip oscillator and clock hardware. The framework clock likewise assumes a noteworthy part in operation of the microcontroller. An 11.0592MHz quartz precious stone associated with pins 18 and 19 gives fundamental clock to the microcontroller. Control on reset is given by the blend of electrolytic capacitor C3 and resistor R1. Port pins P2.0 through P2.7 of the microcontroller are associated with information port pins D0 through D7 of the LCD, separately. Port pins P3.7 and P3.6 of the microcontroller are associated with enlist select (RS) and empower (E) pins of the LCD, separately. Perused/compose R/W stick of the LCD is grounded to empower for compose operation. Every one of the information is sent to the LCD in ASCII arrange for show. Just the charges are sent in hex shape. Enlist select (RS) flag is utilized to recognize information (RS=1) and summon (RS=0). Preset RV1 is utilized to control the difference of the LCD. Resistor 10k limits the current through the backdrop illumination of the LCD. Port pins P3.0 (RXD) and P3.1 (TXD) of the microcontroller are utilized to interface with the RFID per user through Max232 (1) and GSM Modem are utilized to interface through Max232(2). At the point when a permitted individual having the label enters the RF field produced by the RFID per user, RF flag is created by the RFID per user to transmit vitality to the tag and recover information from the tag.

At that point the RFID per user conveys through RXD and TXD pins of the microcontroller for further handling. Hence on distinguishing the approved individual, the approved individual enters the watchword through console and sends to the microcontroller. On the off chance that the watchword is right then the microcontroller send the SMS to the record holder individual, account holder again send the secret word through SMS to the microcontroller. The microcontroller checks the secret word and got watchword through GSM versatile. On the off chance that this watchword is right, the microcontroller gives high flag to port stick P3.2, transistor Q2 crashes into immersion, and hand-off RL1 empowers to open the security framework. All the while, the LCD demonstrates "get to conceded" message and send to and port stick P1.7 drives piezo signal PZ1 through transistor T1 for voice signal. In the event that the secret word is not substantial, the LCD demonstrates "get to denied" and the security doesn't open.

SOFTWARE PROGRAM TESTING

The programs are written in C or MASM assembly language and compiled using KEIL software.

Hardware Assembling and Testing

First step, we need to make single side PCB layout of the Security system based on RFID and GSM technology for testing the circuit, proceed as follow

- After assembling all the components on the PCB, connect TX and RX pins of the GSM modem to pins 13 and 14 of MAX 232 and RFID Reader, respectively and insert a valid SIM in the card holder of the GSM modem.
- Connect ground pins of the GSM modem and RFID to the ground rail of the circuit.
- This projects are implemented and tested successfully by us.
- This system is very much used for keeping the money safely.

CONCLUSIONS

We have actualized a security framework utilizing latent RFID and GSM. It is a minimal effort, low in power origination, reduced in size and independent framework. The microcontroller thinks about the passwords entered by console and got through cell phone. In the event that these passwords are right the microcontroller gives vital control flag to open the security. Caution will be turn on at whatever point entryway is compelled to open. Future work of this paper, is wanted to a create security framework in view of 3G camera for visual distinguishing proof of the individual.

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